DOCUMENT RESUME

ED 071 144	24	EA 004 562

AUTHOR	Baas, Alan M.
TITLE	Science Facilities: Educational Facilities Review Series Number 11.
INSTITUTION	Oregon Univ., Eugene. ERIC Clearinghouse on Educational Management.
SPONS AGENCY	National Center for Educational Research and Development (DHEW/OE), Washington, D.C.
BUREAU NO	BR-8-0353
PUB DATE	Jan 73
CONTRACT	OEC-0-8-080353-3514
NOTE	10p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Bibliographies; Building Design; *Educational Facilities; Educational Specifications; *Facility Guidelines; Flexible Facilities; Furniture Design; Interdisciplinary Approach; Interior Design; *Literature Reviews; Physical Design Needs; *Planning (Facilities); Public Schools; *Science Facilities; Science Laboratories; Science Teaching Centers; Student Teacher Relationship
IDENTIFIERS	Specialized Facilities

ABSTRACT

The design of today's science facilities for elementary and secondary schools reflects trends toward education's growing emphasis on dynamic student-teacher interaction and toward a growing national sensitivity to social and environmental needs. The modern science facility exhibits a primary concern for individual student involvement in the methodologies and results of the scientific process. Conventional classroom and laboratory "eggcrate" arrangements are giving way to open areas facilitating both group and audiotutorial learning. The literature, previously cited in RIE and CIJE, indicates that, while the use of flexible design concepts in science facilities lags behind similar uses in the rest of the school, significant progress is being made. (Author)

EDUCATIONAL RESOURCES INFORMATION CENTER • CLEARINGHOUSE ON EDUCATIONAL MANAGEMENT

EDUCATIONAL FACILITIES REVIEW SERIES

EA 004 562

—an ongoing survey of topics in educational management designed to provide the practicing educator with reviews that are contemporary and sensitive to education's changing information requirements. Most of the reports cited in the reviews have been processed by this and other clearinghouses in the ERIC system and announced in *Research in Education* (*RIE*), ERIC's monthly index and abstract catalog.

ED 071144

January 1973 Number 11

Science Facilities

Alan M. Baas

> If the rest of a high school folds easily into large group, small group, and individualized instruction, a science facility that is geared only for class-size student loads is inefficient. Planners must continually ask: Are we designing our science program in terms that make sense to students, or are we saying that what we have always done is the only way?
>
> *Miller (1972)*

The design of today's science facilities for elementary and secondary schools reflects two basic trends: education's growing emphasis on dynamic interaction among students and teachers, and a growing national sensitivity to social and environmental needs.

It is generally accepted that the spirit of scientific inquiry cannot be *taught* so much as it must be *experienced*. To that end, the modern science facility exhibits a primary concern for individual student involvement in the methodologies and results of the scientific process. Conventional classroom and laboratory "eggcrate" arrangements are giving way to open areas facilitating both group and audiotutorial learning. Rigid distinctions among facilities housing different disciplines (biology, chemistry, physics) are diminishing. In their places, imaginative programs combined with open space lab designs are providing students with opportunities to follow, within a single laboratory facility, the logical development of a problem through all its consequences. Thus, lab stations frequently accommodate both wet and dry inquiry methods

and are grouped for easy access to centralized stores containing equipment and materials germane to all the sciences.

The literature indicates that, while the use of flexible design concepts in science facilities lags behind similar uses in the rest of the school, significant progress is being made. Technological advances in the design of mobile laboratory islands, quick-coupling service outlets, and sophisticated movable partitions enable science programs to keep pace with changing educational practice.

Ten of the documents contained in this review are available through the ERIC Document Reproduction Service. Complete instructions for ordering them may be found at the end of the review.

FACILITY DESIGNS AND TEACHING TECHNIQUES

In an *American School & University* article, Furgusson (September 1972) describes current trends in science education and identifies ways for improving secondary school laboratories. His observations, derived from a study by the National Science Teachers Association (NSTA), report a general trend away from separate lecture and laboratory rooms and toward open areas supporting a variety of learning activities. He notes that teaching methods are shifting from use of blackboards and overhead projectors to techniques employing self-paced study with film loops, carrel units equipped with many aids for individualized instruction, and closed-circuit TV. Individually paced science programs are replacing traditional group-paced lecture and lab patterns, and more attention is being given to career goals and the relation of other disciplines to science. Finally, Furgusson observes, student-staff relationships vary widely among different schools. These variations range from strictly teacher-dominated curricula to student-staff planned achievement goals, alternative curriculum paths, and use of resource personnel for various responsibilities.

Furgusson's suggestions for improving facilities involve flexible space configurations, movable furniture, lab islands, and use of simple technological aids such as film loops and audio tape recorders. NSTA findings indicate caution should be exercised in the purchase of closed-circuit TV equipment. Such equipment is costly and usually does not allow the student much control over his instruction.

With current emphasis shifting to more individualized instruction, Furgusson stresses the logistics of providing materials and equipment through centralized storage and preparation rooms. The NSTA study also points out that science facilities should be close to other learning areas to facilitate possible interdisciplinary programs. Recommendations concerning seminar areas, individual study areas, special project areas, and multidiscipline lecture halls reflect current trends in teaching techniques.

In an article in *Nation's Schools*, Miller (1972) stresses that, for many students, science is the most exciting part of the secondary curriculum. Modern lab designs should reflect this excitement in ways that recognize space age technologies and methods. Three different approaches to matching lab and classroom design with science teaching techniques receive Miller's

attention. He describes and illustrates multidisciplinary, fragmented, and audiotutorial facilities patterns capable of keeping pace with changing educational trends.

Of the three approaches, the multidisciplinary pattern is most capable of meeting flexible scheduling and individualized instruction requirements. This approach groups laboratory and classroom facilities for several different sciences within an open arrangement designed to foster an understanding of scientific inquiry as an interrelated undertaking. By designing lab stations that meet the needs of all the sciences and grouping them together in the same basic space, this approach permits students to explore fully the logical development of a problem without being restricted to the lab facilities of a particular science.

The fragmented pattern involves a combination of conventional classrooms and labs designed with movable partitions and quick-couple utility connections that can provide either conventional or open space learning areas. This approach works best when the school is departmentalized, the science staff prefers specialized areas, and lectures and labs are conducted in groups.

The audiotutorial approach can be integrated with either of the first two patterns and works well with both conventional and modular scheduling. Miller discusses how individual stations may be set up for audiotutorial instruction and identifies some of the advantages and disadvantages of such an approach.

Miller offers design tips for service couplings and a sketch of a recommended portable service unit. He concludes with a list of specific schools employing innovative designs and techniques.

Engelhardt (1970) reviews publications supporting the concept that carefully planned special characteristics of a classroom can facilitate desired activities for both teachers and students. Denoting these facilitating associations as the "suggestiveness of space," he stresses that the architect must know the particular instructional needs of a science program in order to determine the program's spatial requirements. The material provides a list of specific findings that may help in designing better schools.

Two earlier documents by Engelhardt examine in detail the relationship between instructional needs and facilities design in science programs. In the first (1966), he examines key issues relevant to the development of educational specifications for ninth- through twelfth-grade science accommodations. With the assumption that physical environments directly influence the teaching-learning process, he treats the motivational effects of an environment. His findings are organized in a procedural planning model intended to assist educators in becoming more effective participants in the design of science facilities.

Engelhardt's planning model works with four basic determinants of educational specifications: gross activities and subgroup organization (reading, audiovisual instruction, individual research projects, team research), number of students to be accommodated in a given space, services required (water, electricity, sunlight, temperature control), and location in relation to school building and site. To help relate design considerations to goals, he defines conventional science teaching goals and discusses the emergence of several alternative goals. These alternatives reflect current thought in science education (for example, ecological and sociopolitical implications of scientific research) and have direct consequences

on space requirements.

After his discussion of goals, Engelhardt analyzes various instructional methods in relation to physical facilities, including wet and dry laboratory use, verifying and inquiry experimental approaches, and directed and undirected study. He supplements his discussion with specific recommendations for outdoor instructional areas, ancillary spaces, classroom-labs, separate labs, and project rooms. His conclusions relate to methods of determining educational specifications and approaches to planning and research. Substantive appendixes present definitions and examples of laboratory types, with literature references for each type, and a seventeen-page bibliography.

Engelhardt follows his 1966 study with a doctoral thesis further examining aspects of spatial influence on science teaching methods (1968). To gather his data, he employed questionnaires and interviews with teachers whose science facilities were designed and built during the 1960s. Engelhardt's primary intention is to provide architects and educators with several perspectives for laboratory design. His major findings are:

- Teachers working in classroom-labs tend to use wet-inquiry techniques more than those using separate lab facilities.
- The proximity of the library increases teacher-student use of its resources.
- There is a general disuse of outdoor areas, individual project space, and greenhouses.
- Neither teacher-training nor lab design takes into consideration the fact that microorganisms are the predominant living organism used in secondary school science programs.
- Self-access by teachers to lab facilities is desirable for lab-centered classes.

The document defines Engelhardt's hypothesis, and describes his model and research design. Possible applications and interpretations of his results conclude the report.

A National Science Teachers Association bulletin (1970) discusses conditions for good science teaching in secondary schools. Recommendations for the kinds and quality of facilities needed for good science learning and teaching include science rooms, learning materials, and programs. Instructional considerations deal with working space, services for the teacher, and the school science budget. For the professional growth of the science staff, recommendations cover provision of library facilities and inservice science learning opportunities.

Norman (1969) surveyed a random sample of Michigan teachers from high schools identified as having biology laboratories with either a split lecture-laboratory design, a perimeter tables design, or a central-fixed or central-movable tables design. The teachers were asked to rate the suitability of their laboratories for instruction in independent study, small-group instruction, and large-group instruction. Responses indicated that the split lecture-laboratory design was favored over designs using perimeter, central-fixed, or central-movable tables. It is felt that design effectiveness could be increased by tables of more functional design, ventilation systems, student stations, and room darkening facilities. Responding teachers also suggested more space for group and individual activities, more service outlets, and increased storage space.

SPECIALIZED FACILITIES

A study by Heldman (1966) focuses on information and ideas that contribute to the improvement of elementary school science facilities. Heldman examined existing facilities in twenty New York

metropolitan area schools, including in his survey inventories of equipment, diagrams of existing facilities, descriptions of the schools, and descriptions of their science equipment purchasing procedures. From his data results he organized a guide for the planning of future facilities, with a suggested list of equipment and supplies appropriate for elementary schools. In his opinion, there should be at least one full-time science room designed and equipped to serve the entire range of students attending the school.

Cox (1966) reports on the design of a centralized science facility intended to serve all pupils from grades four through twelve in the Philadelphia area school systems. The center's location was chosen for proximity to a new university science complex and easy access to traffic routes serving the entire area. In addition to offering courses using science equipment not ordinarily available, the Joseph Priestley Science Center is planned to provide for research in science curriculum development and inservice training for science teachers. Cox stresses society's need for a better understanding of the methods of scientific inquiry and notes that the center's facilities can serve as a clearinghouse for the practice and dissemination of the latest findings in science education. Included in the document are schematic diagrams of specialized laboratories, classrooms, lecture halls, materials centers, and planetaria.

Planetaria and observatories in secondary schools receive attention in a study by McDonald (1966). Using questionnaires, he gathered data concerning the policies of state offices of education toward installation of planetaria and observatories in secondary schools, actual use of such facilities in secondary schools that have them, and recommendations by recognized authorities in astronomy concerning their use. His findings indicate that the majority of the states have no official position regarding either planetaria or observatories, and that only five states had certification requirements for science teachers working with planetaria.

According to Carpenter (1969), programs using mobile science laboratories can induce behavioral changes in students, motivate them, and create interest and excitement about sci- .ce. His report describes the history, funding, equipment, and evaluation of a mobile science lab program. The results of his study are summarized, and a list of recommendations presented.

Information about other specialized science facilities, such as a school arboretum, an ecological garden, and arrangements for small animals app- ar in the Supplemental Bibliography at the end of this review.

PLANNING INFORMATION

Several state departments of education have published planning guides for science facilities. Guidelines by the New Jersey State Department of Education ([1967]) discuss the people involved in facility planning and the formulation of program plans. Consideration is given to space requirements, equipmen, furniture, utilities, and the special need of different branches of science. Appendixes include a bibliography and planning aids.

Secondary school science guidelines published by the Arkansas State Department of Education (1966) emphasize the development of programs and facilities capable of adapting classroom instruction to the needs of individual students.

Elementary, intermediate, and secondary school science facilities receive attention in

a Mississippi State Department of Education publication (1962). This guide discusses special facilities for different courses, standards for furnishing labs, suggestions for remodeling existing facilities, and recommended audiovisual equipment. Checklists are included for furnishing general science, biology, physics, and chemistry rooms. Science teachers' opinions regarding the relative importance of available types of equipment are reported.

For the design of new or remodeled laboratory facilities, the Campus Safety Association (1966) offers a useful guide to design safety. Rather than giving detailed specifications, the publication provides guides and alternatives for:

- automatic systems for fire and explosion protection
- emergency alarm systems
- special facilities for chemical storage, handling, and disposal
- safety equipment
- facilities for animals
- illumination
- radio isotopes
- egress facilities
- fire resistance
- water supply and piping
- miscellaneous design features

Laboratory ventilation receives special emphasis, and a bibliography provides additional materials on infectious agents and animals.

Requirements for planning, designing, constructing, and installing laboratory furniture appear in a document by the State University Construction Fund (1968). Facility criteria for housing laboratory equipment describe center tables, reagent racks, laboratory benches and their mechanical fixtures, sink and work counters, tabletops and troughs, wall storage cabinets, and pegboards. Equipment information includes details of installation sequence, construction, and materials, supplemented by dimensions, drawings, and specification checklists.

BIBLIOGRAPHIES

An interpretive bibliography published by the former ERIC Clearinghouse on Educational Facilities (1970) contains references for science facilities presented in categories: biology, chemistry, astronomy, elementary and secondary schools, colleges and universities, and planning and science laboratories.

Two bibliographies by the National Science Foundation (NSF) provide information relating to the planning, design, and construction of science facilities. The first (1967) is intended to serve persons searching for data on science facility design and to indicate the material available for reference in the NSF offices in Washington, D.C. In addition to the publications in this bibliography, the NSF collection contains manufacturers' product catalogs covering the laboratory equipment, furnishings, and construction components used in science facilities. Articles and papers are arranged in topical areas: physical plant planning, physical plant cost and management, space utilization and measurement, general design and construction of science facilities, environmental conditions for learning, science building type studies, and special facilities and equipment.

The second NSF bibliography (1969) provides additional reference materials within the same basic categories as the first.

The ERIC Information Analysis Center for Science Education (1968) developed a general bibliography of 297 selected docu-

ments related to instructional equipment and materials for teaching and learning science. Citations include major ideas contained in each document.

REFERENCES

Abstracts of the following documents can be located in *Research in Education*. The complete texts are available from the ERIC Document Reproduction Service (EDRS), commercial channels, or both. Publications can be ordered in either Xerox copy form (HC) or microfiche (MF).

For each order, indicate the ED numbers of the desired publications, the type of reproduction desired (paper or microfiche), and the number of copies being ordered.

Payment must accompany orders under $10.00. Postage, at book rate or library rate, is included in the price of the document. If first class mailing is desired or if shipment is outside the continental United States, the difference between book rate or library rate and first class or foreign postage will be billed at cost. All orders must be in writing.

Journal articles cited with EJ numbers are indexed in *Current Index to Journals in Education*, a monthly companion index to *Research in Education*. Reproductions of these journal articles are not available from EDRS.

Address requests to ERIC Document Reproduction Service, P.O. Drawer O, Bethesda, Maryland 20014.

Arkansas State Department of Education. Science Guidelines for the Secondary Schools of Arkansas. Little Rock: 1966. 33 pages. ED 023 276 MF $0.65 HC $3.29.

Campus Safety Association. Laboratory Design Considerations for Safety. Chicago: 1966. 27 pages. ED 017 143 MF $0.65 HC $3.29.

Carpenter, Charles D. Evaluation of Mobile Science Laboratory. Final Report. Minnesota: Albert Lea Public School District 241, 1969. 249 pages. ED 028 957 MF $0.65 HC $9.87.

Cox, Donald W. The Joseph Priestley Science Center, A Feasibility Study of a Proposed Supplementary Science Center for the Lower Delaware Valley. New York: Educational Facilities Laboratories, Inc., 1966. 67 pages. ED 025 120 Document not available from EDRS.

Engelhardt, David Frederic. Space Requirements for Science Instruction Grades 9-12. Cambridge, Massachusetts: Graduate School of Education, Harvard University, 1966. 143 pages. ED 022 353 MF $0.65 HC $3.29.

———. "Aspects of Spatial Influence on Science Teaching Methods." Doctoral thesis. Graduate School of Education, Harvard University, 1968. ED 023 262 Document not available from EDRS. (Available from University Microfilms. 300 North Zeeb Road, Ann Arbor, Michigan 48103.)

———. "Planning the Teaching Environment: Secondary Science Facilities." Paper presented at the Northeast Regional Conference, National Science Teachers Association, Bedford, New Hampshire, September 1970. 13 pages. ED 045 397 MF $0.65 HC $3.29.

ERIC Clearinghouse on Educational Facilities. Science Facilities. An Interpretive Bibliography. Madison: University of Wisconsin, 1970. 82 pages. ED 037 944 MF $0.65 HC $3.29.

ERIC Information Analysis Center for Science Education. Science Education Information Report, General Bibliography Series 13, Instructional Equipment and Materials. Columbus, Ohio: 1968. 79 pages. ED 026 279 MF $0.65 HC $3.29.

Furgusson, Jeremy. "Ten Ideas Upgrade School Labs." *American School & University*, 45, 1 (September 1972), pp. 15-17, 72. EJ number not yet assigned.

Heldman, Lawrence John. "Planning Elementary School Science Facilities." [Doctoral thesis], Columbia University, 1966. 238 pages. ED 024 582 Document not available from EDRS. (Available from University Microfilms, 300 North Zeeb Road, Ann Arbor, Michigan 4 Order No. 67-2806, Microfilm $4.00, Xerox J0.)

McDonald, Dale E. "The Utilization of Planetaria and Observatories in Secondary Schools." [Doctoral thesis], University of Pittsburgh, 1966. 222 pages. ED 023 575 Document not available from EDRS. (Available from University Microfilms, 300

To gather the documents in this review, *Research in Education* and *Current Index to Journals in Education* monthly indexes were searched from January 1968 through October 1972, using as search terms these descriptors: **Science Facilities** and **Science Laboratories.**

North Zeeb Road, Ann Arbor, Michigan 48103. Order No. 67-7152. Microfilm $4.00, Xerox $10.00.)

Miller, Richard P. "How to Plan Science Facilities for the 70s." *Nation's Schools*, 89, 36 (March 1972), pp. 49-58. EJ 054 536.

Mississippi State Department of Education. Science Facilities for Mississippi Schools, Grades 1-12. Jackson: 1962. 73 pages. ED 025 902 MF $0.65 HC $3.29.

National Science Foundation. Literature Related to Planning, Design and Construction of Science Facilities. Washington, D.C.: 1967. 47 pages including supplement. ED 028 593 MF $0.65 HC $3.29.

———. Science Facilities Bibliography. Washington, D.C.: 1969. 51 pages. ED 033 559 MF $0.65 HC not available from EDRS. (Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. $0.35, plus $0.10 for 1970 supplement.)

National Science Teachers Association. Conditions for Good Science Teaching in Secondary Schools. Washington, D.C.: 1970. 19 pages. ED 052 930 MF $0.65 HC not available from EDRS. (Available from National Science Teachers Association, 1201 Sixteenth Street NW, Washington, D.C. 20036. $1.50.)

New Jersey State Department of Education. A Guide for Planning School Facilities for Science Education. Trenton: [1967]. 13 pages. ED 037 017 MF $0.65 HC $3.29.

Norman, John Thomas. "An Investigation of the Suitability of Various Types of Biology Laboratory Designs for Certain Instructional Practices." Ph.D. dissertation, Michigan State University, 1969. 148 pages. ED 053 972 Document not available from EDRS. (Available from University Microfilms, 300 North Zeeb Road, Ann Arbor, Michigan 48103. Order No. 70-15097. Microfilm $4.00, Xerox $10.00.)

State University Construction Fund. Laboratory Equipment Criteria. Albany, New York: 1968. 51 pages. ED 037 937 Document not available from EDRS.

SUPPLEMENTARY REFERENCES

Cameron, J. A. "Keeping Small Mammals in Schools," *Journal of Biological Education*, 4, 4 (December 1970), pp. 247-249. EJ 033 356.

Department of Education and Science. Designing for Science: Oxford School Development Project. London: 1967. 98 pages. ED 035 244 Document not available from EDRS. (Available from Pendragon House, Inc., 899 Broadway Avenue, Redwood City, California 94063.)

Field, Nancy Dotterer. "More Than a Space Science Center," *Today's Education*, 60, 7 (October 1971), pp. 32-33. EJ 044 199.

Gambino, Robert B. "A School Arboretum," *Agricultural Education Magazine*, 43, 9 (March 1971), pp. 218-219. EJ 033 358.

Horowitz, Harold, and others. Hoods for Science Laboratories. Reproduced from the *Handbook on Laboratory Safety*. Cleveland: Chemical Rubber Company, n.d. 12 pages. ED 021 405 MF $0.65 HC $3.29.

Lees, E. "Ecological Gardens," *Biology and Human Affairs*, 36, 1 (Autumn 1970), pp. 35-40. EJ 033 354.

Palmer, R. Ronald, and Rice, William Maxwell. Laboratories and Classrooms for High School Physics. New York: Educational Facilities Laboratories, Inc., 1961. 36 pages. ED 035 168 MF $0.65 HC not available from EDRS.

Pratt, Grace K. How to Care for Living Things in the Classroom. Washington, D.C.: National Science Teachers Association, 1965. 16 pages. ED 064 135 MF $0.65 HC not available from EDRS. (Available from NEA Publications Sales, 1201 Sixteenth Street NW, Washington, D.C. 20036. Stock No. 471-14288, $0.35.)

Richardson, John S. Rooms for Developmental Science Courses. School Facilities for Science Instruction, 2nd Edition. Washington, D.C.: National Science Teachers Association, 1961. 8 pages. ED 019 811 MF $0.65 HC $3.29.

Strong, Laurence E., and Stephenson, William R. "Science Lab Design: Much Flexibility at LOW Cost," *American School & University*, 44, 1 (September 1971), pp. 16, 18. EJ 044 208.

Previous Publications in This Series

1. **Educational Specifications, by Philip K. Piele. ED 058 620. MF $0.65 HC $3.29**
*2. **Use of Computers in Planning Higher Educational Facilities, by Philip K. Piele**
*3. **Building Maintenance, by Philip K. Piele**
4. **Building Renovation and Modernization, by Alan M. Baas. ED 061 573 MF $0.65 HC $3.29**
5. **Vocational Education Facilities, by Sharon Counts Johnson. ED 063 618 MF $0.65 HC $3.29**
6. **Open Plan Schools, by Alan M. Baas. ED 064 753 MF $0.65 HC $3.29**
7. **Modular Components, by Alan M. Baas. ED 063 615 MF $0.65 HC $3.29**
*8. **Environments for the Physically Handicapped, by Alan M. Baas**
*9. **Early Childhood Facilities, by Alan M. Baas**
*10. **Relocatable Classrooms, by Alan M. Baas**

***While the supply lasts, a free copy of each review may be obtained by writing to the Editor, ERIC Clearinghouse on Educational Management, University of Oregon, Eugene, Oregon 97403.**

RESEARCH HIGHLIGHTS

There is a general trend away from separate lecture and laboratory rooms in secondary science education and toward open areas supporting a variety of learning activities. *Furgusson (1972)*

Research suggests that the physical environment may have definite motivational effects on the teaching-learning process. *Engelhardt (1966)*

There continues to be a general disuse of outdoor areas, individual project space, and greenhouses in science education. *Engelhardt (1968)*

Neither teacher-training nor laboratory design takes into consideration the fact that microorganisms are the predominant living organisms used in secondary school science programs. *Engelhardt (1968)*

Clearinghouse Accession Number: EA 004 562

The Educational Resources Information Center (ERIC) is a national information system operated by the United States Office of Education. ERIC serves the educational community by disseminating educational research results and other resource information that can be used in developing more effective educational programs.

The ERIC Clearinghouse on Educational Management, one of twenty such units in the system, was established at the University of Oregon in 1966. The Clearinghouse and its nineteen companion units process research reports and journal articles for announcement in ERIC's index and abstract bulletins.

Research reports are announced in *Research in Education (RIE)*, available in many libraries and by subscription for $21 a year from the United States Government Printing Office, Washington, D.C. 20402.

Journal articles are announced in *Current Index to Journals in Education. CIJE* is also available in many libraries and can be ordered for $39 a year from CCM Information Corporation, 866 Third Avenue, Room 1126, New York, New York 10022.

Besides processing documents and journal articles, the Clearinghouse has another major function--information analysis and synthesis. The Clearinghouse prepares bibliographies, literature reviews, state-of-the-knowledge papers, and other interpretive research studies on topics in its educational area.

The ERIC Clearinghouse on Educational Management operates under contract with the Office of Education of the United States Department of Health, Education, and Welfare. This review was prepared pursuant to that contract. Contractors undertaking such projects under government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official Office of Education position or policy.